

Advanced Computing Laboratory (CCS-1)

Publications and Presentations,

March 2004-March 2005

Radiant Team

Book Chapter

W. Feng, "Green Destiny + mpiBLAST = Bioinformagic," in *Advances in Parallel Computing* (series), *Parallel Computing: Software Technology, Algorithms, Architectures, and Applications*, Vol. 13, G.R. Joubert, W.E. Nagel, F.J. Peters, and W.V. Walter (editors), Elsevier. 2004.

Journal Publications

L. Carey, A. Darling, and W. Feng, "Takeoff with mpiBLAST: Parallel Searching," *ClusterWorld Magazine*, Vol. 2, No. 3, March 2004.

M. Gardner, S. Thulasidasan, and W. Feng, "User-Space Auto-Tuning for TCP Flow Control in Computational Grids," *Computer Communications, Special Issue on Network Support for Grid Computing*, 27(14): 1364-1374, September 2004.

J. Hurwitz and W. Feng, "Analyzing MPI Performance over 10-Gigabit Ethernet," *Journal of Parallel and Distributed Computing, Special Issue: Design and Performance of Networks for Super-, Cluster-, and Grid-Computing*, 2005 (to appear).

C. Jin, D. Wei, S. Low, G. Buhrmaster, J. Bunn, D. Choe, R. Cottrell, J. Doyle, W. Feng, O. Martin, H. Newman, F. Paganini, S. Ravot, and S. Singh, "FAST TCP: From Theory to Experiments," *IEEE Network*, January-February 2005.

M. Veeraraghavan, X. Zheng, W. Feng, H. Lee, E. Chong, and H. Li, "Scheduling and Transport for File Transfers on High-Speed Optical Circuits," *Journal of Grid Computing*, 1(4): 395-405, June 2004.

X. Zhang, L. Bhuyan, and W. Feng, "Anatomy of UDP and M-VIA for Cluster Communication," *Journal of Parallel and Distributed Computing, Special Issue: Design and Performance of Networks for Super-, Cluster-, and Grid-Computing*, 2005 (to appear).

Resilient Technologies

R. Aulwes, D. Daniel, N. Desai, R. Graham, L. Risinger, M. Sukalski, and M. Taylor, "Architecture of LA-MPI, a network-fault-tolerant MPI," in the *Proceedings of the 18th International Parallel and Distributed Processing Symposium*, Santa Fe, N.M., April 2004.

S. Ayyorgun and R. Cruz, "A Composable Service Model with Loss and a Scheduling Algorithm," in the *Proceedings of the 23rd IEEE Conference on Computer Communications (INFOCOM)*, Hong Kong, March 7-11, 2004. (Also a technical report, LA-UR-03-3939, Los Alamos National Laboratory.)

S. Ayyorgun and R. Cruz, "A Scheduling Problem in Interference-Limited Wireless Networks," in the *Proceedings of the 3rd IEEE International Conference on Networking (ICN)*, pp. 537-544, Guadeloupe, French Caribbean, March 1-March 4, 2004. (Also a technical report, LA-UR-03-7269, Los Alamos National Laboratory.)

S. Ayyorgun and R. Cruz, "A Service-Curve Model with Loss and a Multiplexing Problem," in the *Proceedings of the 24th IEEE International Conference on Distributed Computing Systems (ICDCS)*, pp. 756-765, Tokyo, Japan, March 23-26, 2004. (Also a technical report, LA-UR-03-3939, Los Alamos National Laboratory.)

S. Ayyorgun and R. Cruz, "Interference Control at Packet-Level in Wireless Networks with Quality-of-Service Support," in the *Proceedings of the 2nd IEEE Workshop on Modeling and Optimization in Mobile, Ad-Hoc, and Wireless Networks (WiOpt)*, pp. 20-29, Cambridge, U.K., March 24-26, 2004. (Also a technical report, LA-UR-03-8012, Los Alamos National Laboratory.)

S. Ayyorgun and W. Feng, "A Deterministic Characterization of Network Traffic for Average Performance Guarantees," in the *Proceedings of the 38th Annual Conference on Information Sciences and Systems (CISS)*, pp. 405-413, Princeton, N.J., March 17-19, 2004. (Also a technical report, LA-UR-03-4477, Los Alamos National Laboratory.)

S. Ayyorgun and W. Feng, "A Systematic Approach for Providing End-to-End Probabilistic QoS Guarantees," in the *Proceedings of the 13th IEEE International Conference on Computer Communications and Networks (ICCCN)*, pp. 115-122, Chicago, Ill., October 11-14, 2004. (Also two technical reports, LA-UR-03-3668 and LA-UR-03-7267, Los Alamos National Laboratory.)

A. Ayyorgun, S. Vanichpun, and W. Feng, "Probabilistic QoS Guarantees over Switches and Multiplexers," in the *Proceedings of the 42nd Annual Allerton Conference on Communication, Control, and Computing (ALLERTON)*, Monticello, Ill., September 29-October 1, 2004. (Also a technical report, LA-UR-03-7268, Los Alamos National Laboratory.)

S Ayyorgun, S. Vanichpun, and W. Feng, "Q-Composer and CpR: A Probabilistic Synthesizer and Regulator of Traffic (A Probabilistic Control of Buffer Occupancy)," in the *Proceedings of the 24th IEEE Conference on Computer Communications (INFOCOM)*, Miami, Fla., March 13-17, 2005. (Also a technical report, LA-UR-04-1270, Los Alamos National Laboratory.)

R. Castain, W. Saylor, and H.J. Siegel, "Application of Lagrangian Receding Horizon Techniques to Resource Management in Ad Hoc Grid Environments," 13th Heterogeneous Computing Workshop, in the *Proceedings of the 18th International Parallel and Distributed Processing Symposium*, Santa Fe, N.M., April 2004.

E. Gabriel, R. Graham, R. Castain, D. Daniel, T. Woodall, M. Sukalski, G. Fagg, E. Gabriel, G. Bosilca, T. Angskun, J. Dongarra, J. Squyres, V. Sahay, P. Kambadur, B. Barrett, and A. Lumsdaine, "Open MPI: Goals, Concept, and Design of a Next Generation MPI," in *Recent Advances in Parallel Virtual Machine and Message Passing Interface: 11th European PVM/MPI Users' Group Meeting*, Budapest, Hungary, September 19-22, 2004. Proceedings, Springer-Verlag, September 2004.

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J. Squyres, V. Sahay, P. Kambadur, B. Barrett, A. Lumsdaine, R. Castain, D. Daniel, R. Graham, T. Woodall, M. Sukalski, T. Angskun, G. Bosilca, G. Fagg, E. Gabriel, and J. Dongarra, "A Component Architecture of Message Passing Middleware," in *Cluster '04*, June 2004.

T. Woodall, R. Castain, D. Daniel, R. Graham, M. Sukalski, G. Fagg, E. Gabriel, G. Bosilca, T. Angskun, J. Dongarra, J. Squyres, V. Sahay, P. Kambadur, B. Barrett, and A. Lumsdaine, "Open MPI's TEG Point-to-Point Communications Methodology: Comparison to Existing Implementations," in the *European PVM/MPI*, Springer-Verlag, September 2004.

W. Yu, T. Wodall, R. Graham, and D. Panda, "Design and Implementation of Open MPI over Quadrics/Elan4," in the *19th International Parallel and Distributed Processing Symposium*, Denver, Colo., 2005.

Visualization

P. McCormick and J. Ahrens, "Large-Scale Data Visualization and Rendering—A Problem-Driven Approach," *Visualization Handbook*, Chris Johnson and Charles Hansen (editors), Academic Press, 2005.

P. McCormick, J. Inman, J. Ahrens, C. Hansen, and G. Roth, "Scout: A Hardware-Accelerated System for Quantitatively Driven Visualization and Analysis," IEEE Visualization 2004, pp. 171–178.

Software Components

A. Malony, S. Shende, N. Trebon, J. Ray, R. Armstrong, C. Rasmussen, and M. Sottile, "Performance Technology for Parallel and Distributed Component Software," *Concurrency and Computation: Practice and Experience*.

C. Rasmussen, M. Sottile, J. Nieplocha, R. Numrich, and E. Jones, "Co-Array Python: A Parallel Extension to the Python Language," *Euro-Par 2004 Parallel Processing*.

C. Rasmussen, M. Sottile, S. Shende, and A. Malony, "Bridging the Language Gap in Scientific Computing: The Chasm Approach," *Concurrency and Computation: Practice and Experience*.

C. Rickett, S. Choi, C. Rasmussen, and M. Sottile, "Rapid Prototyping Frameworks for Developing Scientific Applications: A Case Study," in *Proceedings of the Los Alamos Computer Science Institute Symposium (CDROM)*.

X. Zhao, J. Johnson, and C. Rasmussen, "Surface Tension of Quantum Fluids from Molecular Simulations," *Journal of Chemical Physics*.